



TH420

Thermal Printer

User Guide

Uns interessiert Ihre Meinung
zu dieser Druckschrift.

Schicken Sie uns bitte eine
Information, wenn Sie uns
konstruktive Hinweise geben wollen:

Dafür bedanken wir uns im Voraus.

Mit freundlichen Grüßen

Ihre Meinung/ Your
opinion:

We would like to know your
opinion on this publication.

Please send us a copy of this page if
you have any constructive criticism.

We would like to thank you in advance
for your comments.

With kind regards,

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TH420

Thermal Printer

User Guide



Edition April 2005

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Manufacturer's Declaration and Approval

General Authorization



This device fulfills the requirements of the EEC standard 89/336/EEG "Electromagnetic Compatibility". Therefore, you will find the CE mark on the device or packaging.

FCC-Class A Declaration

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Modifications not authorized by the manufacturer may void users authority to operate this device.

This class A digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.



Additionally, the TH420 has received the cUL and UL approval.

User Information

Wincor Nixdorf does not accept responsibility for radio and TV interference and faults that are caused by unauthorized changes that have been made to the devices. Furthermore, cables or other devices that have not been

SAFETY INFORMATION

approved by Wincor Nixdorf may not be connected to the device. The user is responsible for any faults and interference that are caused as a result.

Repair work on the devices should only be carried out by authorized and specially trained personnel. Improper repairs will lead to the loss of any guarantee and liability claims.

Extension boards with electrostatically endangered components can be identified with this label.

Safety Information

This device conforms to the corresponding safety regulations for information technology devices, including electronic office machines for use in the office environment. Connect only WN approved power supplies.

- If the device is moved from a cold environment to a warmer room where it is to be operated, condensation could occur. The device must be completely dry before being put into operation. Therefore an acclimatization time of at least two hours should be accounted for.
- Lay all cables and supply lines so that nobody can tread on them or trip over them.
- Data cables should neither be connected nor removed during electrical storms.
- Protect the device from vibrations, dust, moisture and heat, and only transport the device in its original packaging (to protect it against impact and blows).
- Take care to ensure that no foreign objects (e.g. paper clips) or liquids can get into the inside of the device, as this could cause electrical shocks or short circuits.
- In case of emergencies (e.g. damaged housing, liquid or foreign objects getting into the device), the device should be switched off immediately.
- Generally you should connect IT-devices only to power supply systems with separately guided protective earth conductor (PE), known as TN-S networks. Do not use PEN conductors! Please also observe the recommendations of the norm DIN VDE 0100, part 540, Appendix C2, as well as EN50174-2, §5.4.3.

Instructions for Maintenance

Clean your TH420 regularly with an appropriate surface cleaning product. Make sure that the device is switched off, connector cables are unplugged and that no moisture is allowed to get into the inside of the device.

Warranty

Wincor Nixdorf guarantees generally a warranty engagement for 12 months beginning with the date of delivery. This warranty engagement covers all those damages which occur despite a normal use of the product.

Damages because of

- improper or insufficient maintenance,
- improper use of the product or unauthorized modifications of the product,
- inadequate location or surroundings

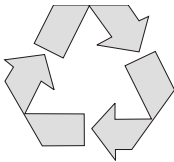
will not be covered by the warranty.

For further information of the stipulation look at your contract.

All parts of the product which are subject to wear and tear are not included in the warranty engagement.

Please order spare parts at the Wincor Nixdorf customer service.

Recycling



Environmental protection does not begin when the time has come to dispose of the TH420; it begins with the manufacturer. This product was designed according to our internal norm "Environmental conscious product design and development".

The TH420 is manufactured without the use of CFCs und CCHS and is produced mainly from reusable components and materials. The processed plastics can, for the most part, be recycled. Even the precious metals can be recovered, thus saving energy und costly raw materials.

RECYCLING

Please do not stick labels onto plastic case parts. This would help us to re-use components and material. You can protect our environment by only switching on your equipment when it is actually needed. If possible, even avoid the stand-by-mode as this wastes energy, too. Also switch your equipment off when you take a longer break or finish your work.

Currently at present, there are still some parts that are not reusable. Wincor Nixdorf guarantees the environmentally safe disposal of these parts in a Recycling Center, which is certified pursuant to ISO 9001.

So don't simply throw your TH420 on the scrap heap when it has served its time, but take advantage of the environmentally smart up-to-date recycling methods!

Please contact your competent branch for information on how to return and re-use devices and disposable materials.

Voluntary Control Council for Interference (VCCI) Radio Frequency Interference Statement

This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

About This Guide

What is in this guide

The four chapters that follow are organized according to what you want to learn about the printer, learn about the set up, operation, and routine testing and servicing of the printer.

- Chapter About the Printer
 - What the printer does
 - How it communicates
 - Operator controls
 - Standard features and Options
- Chapter Setting up the Printer
 - Preparing for installation
 - What comes with the printer
 - Packaging
 - Connecting the printer to the system
 - Testing the printer
- Chapter Using the Printer
 - Printing on forms or checks
 - Verifying and validating checks
 - Clearing paper jams
 - Printer configurations
 - Printer settings and functions
 - Troubleshooting the printer
- Chapter Paper and Supplies
 - Form specifications
 - Slip forms
 - Check specifications
- Chapter USB Driver Installation
 - Installing and Using the USB driver
 - Installing the RS-232C printer driver
 - Checking the installation
 - Troubleshooting
- Chapter Technical Data

WHAT IS IN THIS GUIDE

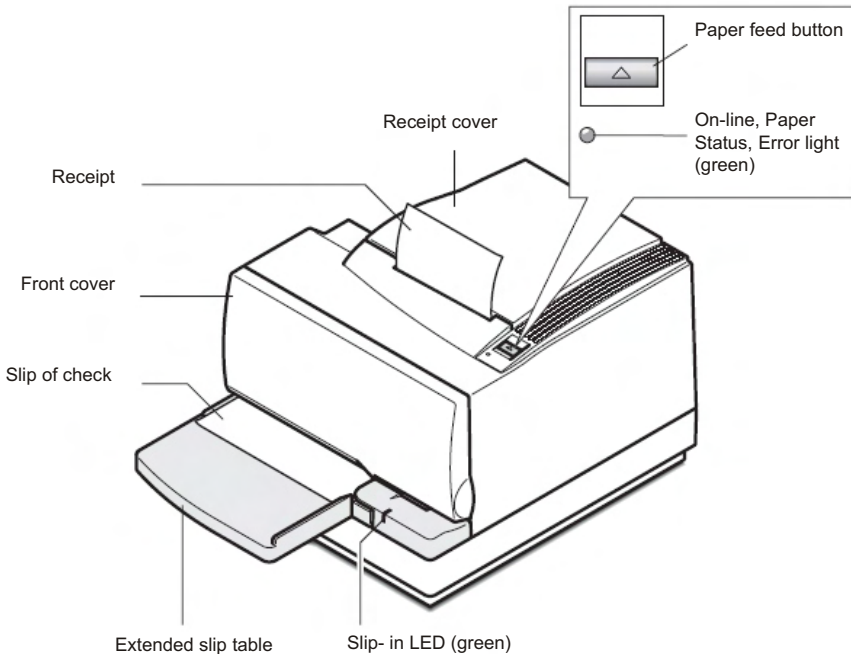


Notes in the manual are marked by this symbol.



This symbol is used for warnings.

About the Printer

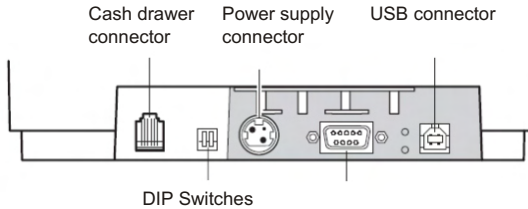


The TH420 is a low-cost, high-efficiency, point-of-sale (POS) printer that boasts the smallest footprint of any hybrid printer. It features fast monochrome or two-color receipt printing plus a drop in validation print station. The TH420 provides maximum flexibility, performance, and reliability.

It consists of two specialized printers in one compact package: a two-color thermal printer on top that prints receipts, and an impact slip printer to print on forms and checks that you insert.

The TH420 fits easily in spaces where no other hybrid printer can and connects to most host computers via the Dual 9-pin /USB interface or 25-pin RS-232 interface or Powered USB.

ABOUT THE UNIVERSAL SERIAL BUS



The printer's standard command set allows it to work with software written for Wincor Nixdorf or other compliant printers. A variety of sensors enables the printer to communicate its status to the host computer. The printer also has an electronic journal feature.

The easy-to-use thermal printer requires no ribbon or ink cartridge. Load new paper by simply opening the clamshell™ receipt cover and dropping in a new roll.

The impact printer provides the power and flexibility to print on checks or multi-part forms up to four plies, in a wide variety of sizes and orientations.

This section describes the printer's features and options in more detail.

About the Universal Serial Bus

The Universal Serial Bus (USB) is a peripheral bus for personal computers that was first released in January 1996. Since that time, virtually all Intel Architecture personal computers have the hardware to support USB, and a large number of computers exist that have both the hardware and software support required to interface with USB peripherals.

Advantages of USB connections

USB has a number of advantages over Application Compatible Escape Commands connection schemes (e.g., serial RS-232C). These advantages include:

- High Speed: up to 12 MB/second for high-speed devices.
- Plug and Play: Devices are automatically recognized and configured at installation.
- Hot plug: Bus supports installation and removal of devices with the power applied.

- Up to 127 devices: One host can support up to 127 devices with the use of hubs.
- “Free ports”: Wincor Nixdorf BEETLE systems and the most PC architecture machines contain two USB ports in the base hardware.

These advantages have become attractive to the POS industry for a couple of reasons.

Additional POS devices

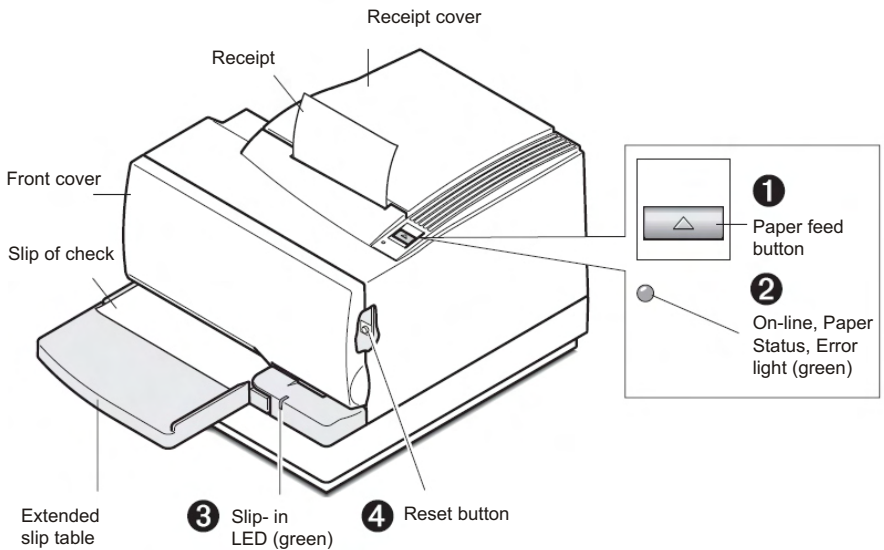
Some POS systems are required to host more peripherals than can be supported by four RS-232C ports typical in a BEETLE platform. With the addition of one (or two) USB connectors, the BEETLE platform can now support the additional devices that had previously required a serial port expander card.

Higher bandwidths

New devices coming into use have bandwidth requirements that are higher than the bandwidth that can be supported on Application Compatible Escape Commands interfaces. These devices include image scanners and printers. As the speed and capability of POS printers increases, the performance of the printer in an application can become limited by the speed of the communications interface.

USB provides ample bandwidth to support current and future POS printer requirements.

User Controls



The printer has the following controls:

The paper feed button (1) advances the receipt paper and is used in navigating configuration menus.

The On-line, Paper Status, Error LED (2) shows the printer status by shining or flashing.

The slip-in LED (3) indicates that a form is inserted properly.

The reset button (4) clears the printer's memory or begins a special mode.

The printer also indicates its status when it is first turned on, or after it has been reset, by beeping. A single beep indicates the printer has successfully completed its startup routine. If the printer beeps in a single, double, or triple pattern at first power on, please call your service representative.

Available printer configurations

There are several configurations of the printer, depending on the combination of desired options.

Printer configuration identification

See the sample below to determine the printer configuration. The printer configuration identification (model ID) is located on the model label attached to the back of the printer. This information is also shown on the installation quality report card. The model ID description is shown below.

Communication interfaces

- RS-232C serial interface (25-pin)
- Universal Serial Bus (USB)
- Powered USB

Standard features

Advanced interface design

- Sensors detect whether any of the covers are open, the paper is low in the receipt printer, or the paper is positioned properly in the slip printer.
- Software-controlled audible tone for various alerts.
- Online configuration menu—the printer guides the user through its configuration settings by printing instructions and a menu on receipt paper.

Electronics and firmware

- Industry-standard command set makes the printer compatible with existing software, yet enables new features.

STANDARD FEATURES

- Remote diagnostics capability tracks important printer data.
- 2 MB flash memory standard available memory for multiple logos, graphics, user-defined character set, and user data storage.
- 16-bit electronics architecture.
- Communication rate up to 115,200 baud.
- Flash download mode lets the user upgrade the printer's firmware.

Thermal receipt printer

- Extremely fast and quiet two-color thermal printhead.
- No ribbon or ink cartridge to change.
- Drop-in paper loading. Paper type selection through command "Set paper type" (1D 81 m n) or configuration menu.
- Double high, double wide, bold, inverse, underlined, superscript and subscript, italics, scalable and rotated print modes.
- Resident character sets: Code Pages 437 (US), 850 (Multilingual), 737 (Greek), 852 (Slavic), 858 (with Euro symbol), 860 (Portuguese), 862 (Hebrew), 863 (French-Canadian), 865 (Nordic) 866 (Cyrillic), and 1252 (Windows Latin 1).
- Prints standard bar codes: Code 39, UPC-A, UPC-E, JAN8 (EAN), JAN13 (EAN), Interleaved 2 of 5, Codabar, Code 93, Code 128, EAN 128, and PDF-417 two-dimensional code. Also prints "ladder" bar codes.
- Host-selectable 44 or 56 columns on 80 mm wide "POS grade" monochrome or two-color thermal paper.
- 8 dots/mm print resolution.
- Up to 53.3 lines-per-second (180 mm/second) throughput print speed (monochrome); up to 29.3 line-per-second (100 mm/second) throughput print speed (two-color).
- Standard receipt cutter.

Impact slip printer

- Bi-directional impact printhead designed for a very long life.
- Snap-on ribbon cassette.
- Prints on forms up to five plies.
- Horizontal flatbed extended slip table.
- Form insertion flexibility: insert forms in front or from the side.
- Form alignment sensors and LED indicator.
- Resident character sets: Code Pages 437 (US), 850 (Multilingual), 737 (Greek), 852 (Slavic), 858 (with Euro symbol), 860 (Portuguese), 862 (Hebrew), 863 (French-Canadian), 865 (Nordic) 866 (Cyrillic), and 1252 (Windows Latin 1).
- Double wide and rotated print modes; a double strike print mode improves contrast.
- Software selectable pitch: either standard (13.9 characters per inch, 66 columns) or compressed (17.1 characters per inch, 80 columns).
- 4.8 lines-per-second (16 mm/second) print speed.
- Optional check handling features (see “Impact slip printer options” on the next page).

Exceptions

Print speed and throughput will decline when:

- Temperature is less than 25°C.
- Energy setting is greater than 100%.
- Dot coverage is greater than 25% or the format contains solid horizontal lines.
- The printer is waiting for data or on an Ethernet interface network traffic is heavy.
- Power setting is equal to 48 Watts.

Options

Connectivity

- Three standard plug-in printed circuit boards are available depending on the communication interface required. Interfaces with 25-pin RS-232C only, USB only can be provided.
- Communication cables are available for all interfaces.

Setting up the Printer

Check the packing list

Save all packing materials in case you need to repack the printer for shipping or storage. Before installation, check that all the items on this list have been shipped (printers shipped in bulk may not include all these items):

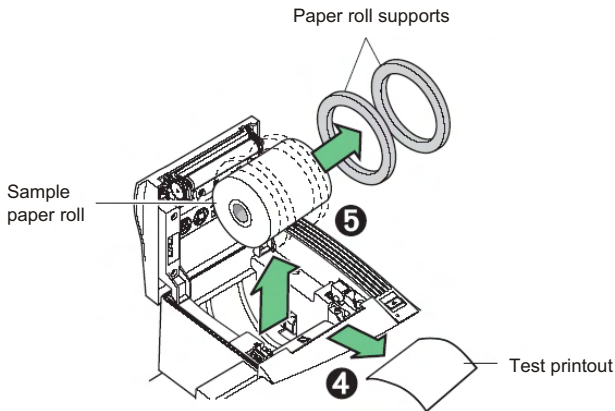
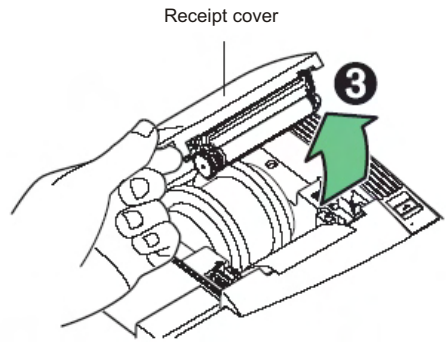
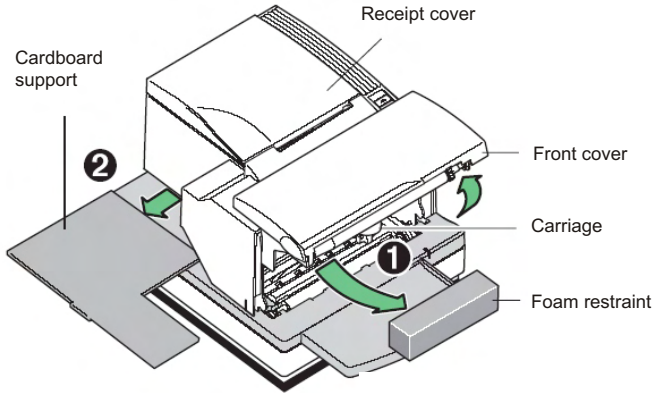
- Printer (enclosed in a plastic bag with foam pack)
- Thermal receipt sample paper roll (inside receipt bucket)
- Test printout protecting the printhead (inside receipt bucket)
- Cardboard support for cantilever (on slip table)
- Foam restraint for carriage (behind front cover)
- Ribbon cassette
- TH420 Two-Color Thermal Receipt and Impact Slip Printer: Setup Guide

To report any missing materials, or to report a printer that was damaged during shipping, call your supplier.

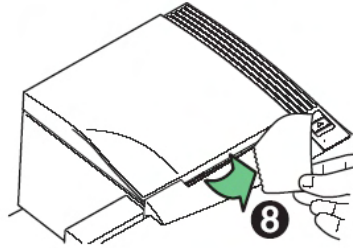
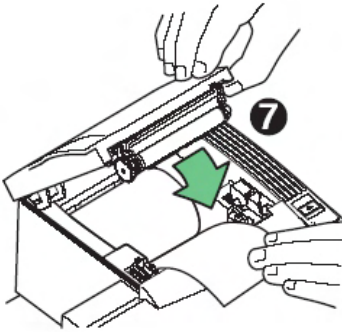
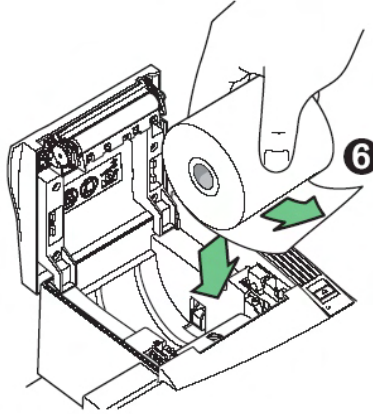
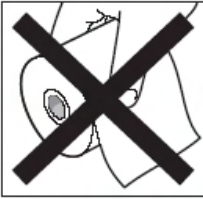
Remove the packing restraints

- Open the front cover, remove the foam restraint holding the carriage (1).
- Remove the cardboard support (2) from the slip path.
- Open the receipt cover (3).
- Remove the test printout (4).
- Lift the sample thermal paper roll out of the paper bucket and remove the paper roll supports (5).

REMOVE THE PACKING RESTRAINTS



Load or change the receipt paper



Change the paper when either a colored stripe appears on the receipt paper or the printer's on-line, paper status, error LED slowly flashes (indicating that 5 ± 2 m (15 ± 10 feet) of paper remains on the roll). Change the paper as soon as possible to avoid running out of paper part way through a transaction.

If the on-line, paper status, error LED blinks fast, the paper is out. Change the paper immediately or data may be lost. The printer will not operate without paper, but it may continue to accept data into memory from the host computer. Because the printer cannot print any transactions, this data in memory may be lost.

LOAD OR CHANGE THE RECEIPT PAPER

If changing the type of paper being used (monochrome vs. two-color version or manufacturer type), you will need to send the “Set paper type” (1D 81 m n) command. Use the “Set paper type” (description found in the Programming Supplement) or selection in the configuration menu.

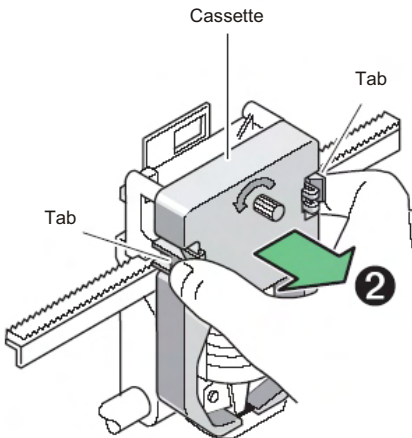
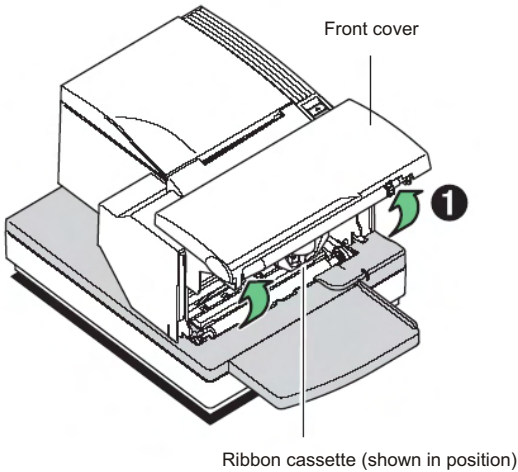
- Open the receipt cover and remove the used roll (if present).
- Tear off the end of the new roll so that the edge is loose.
- Place the roll into the paper bucket with the paper unrolling from the bottom of the roll (6), and with a few inches of paper extending over the cabinet front.
Paper must unroll from the bottom of the roll to insure that the image will print.
- Close the receipt cover while holding the paper over the front of the cabinet (7).
- Remove the excess paper by tearing it against the tear-off blade (8).
- Press the paper feed button to advance the paper if necessary.

Installing or replacing the ribbon cassette

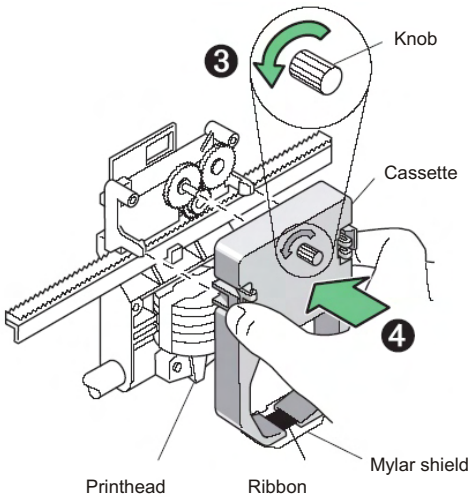
Change the impact printer's ribbon cassette if it is printing lightly or produces marks, lines or other inconsistent printing on the receipt.



You must use an approved Wincor Nixdorf ribbon cassette with the check flip option to prevent jamming or other ribbon problems.



INSTALLING OR REPLACING THE RIBBON CASSETTE



Replacing a used ribbon cassette

- Open the front cover (1) by grasping the cover on each side at the bottom and swing up.
- Pinch in tabs (2) of the old ribbon cassette and pull to remove it.
- Continue to “Installing a new ribbon cassette” step 2.

Installing a new ribbon cassette

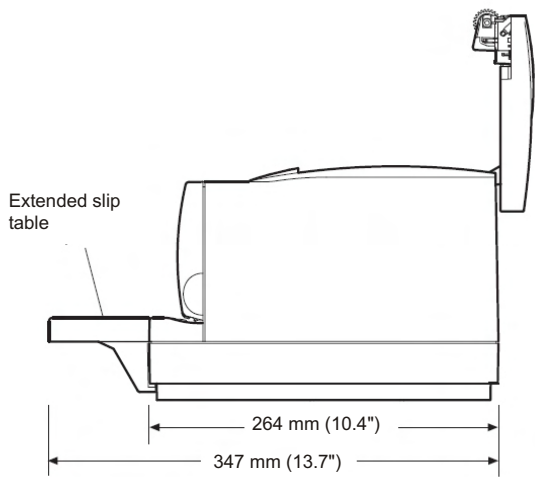
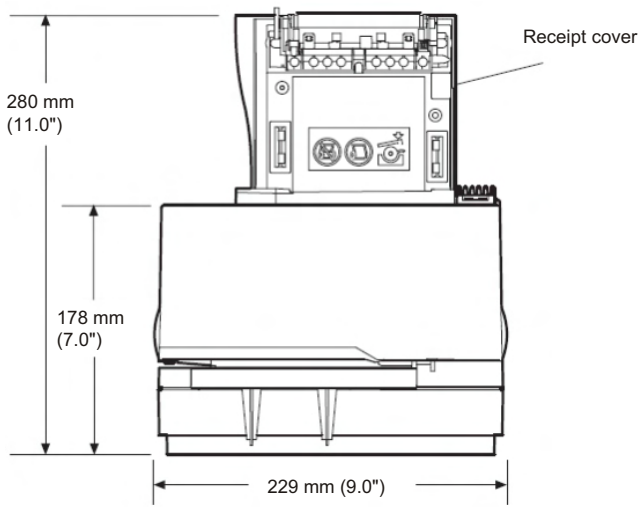
- Open the front cover (1) by grasping the cover on each side at the bottom and swing up.
- Unwrap the new ribbon cassette and tighten the ribbon by turning the knob (3) on the cassette in the direction of the arrow.



DO NOT remove the mylar shield.

- Position the ribbon cassette onto the carriage, as shown (4), making sure the ribbon is underneath the printhead.
- Snap the cassette into place and snap the front cover closed.

Choose a location



CONNECT THE CABLES

The TH420 printer takes up relatively little counter space and may be set on or near the host computer. With the RS-232C interface, you can place the printer up to 50 feet/15 m (with the USB interface up to 15 feet/5 m) from the host computer and power supply.

Place the printer on a level surface, and make sure there is enough room to open the receipt cover to change the paper and to open the front cover to change the impact printer's ribbon cassette. Leave several space around the printer for connecting and accessing the cables.

Connect the cables

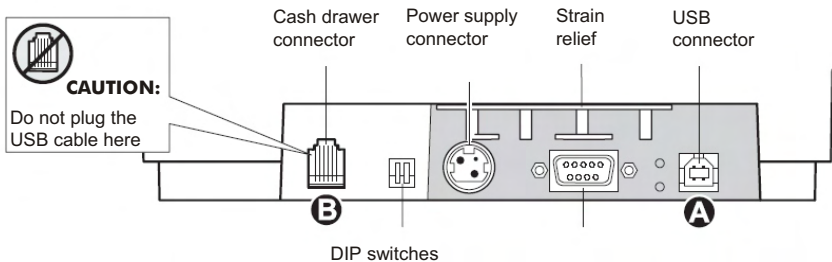
Cable connections are made at the back of the printer.



Connector panel varies with printer configuration (25pin RS232 and Powered USB).



Warning! When instructed to connect the USB cable from the host to the printer, be careful to plug it into the USB board connector (A). Do not insert the USB cable into the Cash Drawer connector (B) on the left back of the printer. Damage to the printer could occur. If you are not sure of your printer configuration, contact Wincor Nixdorf before proceeding.



Connector panel varies with printer configuration (parallel and ethernet connector versions not shown.)

Cash drawer cables

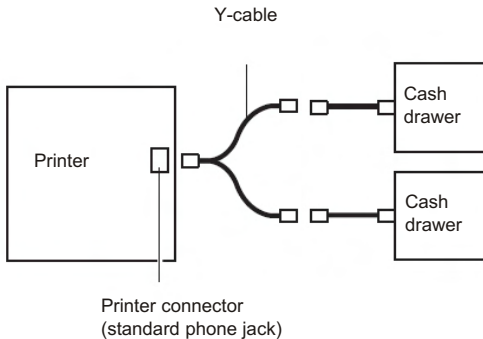
The cash drawer cable connects the printer to one or two cash drawers.



Be careful to connect correct cable into printer cash drawer connector.

Plug the cable into the cash drawer connector (standard phone jack) located at the rear of the printer.

If your system has two cash drawers, attach a Y-cable to the printer's cash drawer connector as shown.



Communication cables

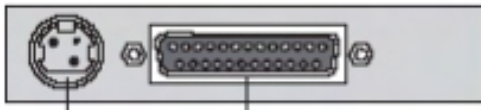
The communication cable connects the printer to the host computer.

If installing the RS-232C communication cable

- Turn off the host computer.
- Plug the communication cable into the connector at the bottom back of the printer.
- Secure the connector by tightening the screws.
- Connect the cable to the host computer.
- Turn host computer on.

CONNECT THE CABLES

RS-232C 25-pin communication connector panel



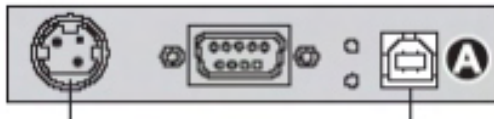
Power supply connector 25-pin RS-232C communication connector

If installing the USB communication cable:

- Turn off the host computer.
- Plug the printer end of the USB cable into the USB connector port on the printer (A).
- Route the cable from the printer as shown on the following page to provide strain relief.
- Plug the computer end of the USB cable into the computer. Make sure the USB symbol on the connector is facing up when you plug it in.

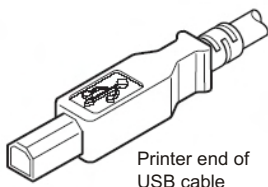
After you have completed setting up the printer, you can install the USB driver onto the host computer.

USB communication connector panel

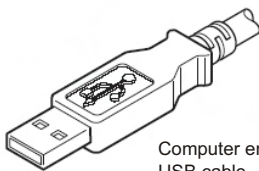


Power supply
connector

USB connector



Printer end of
USB cable

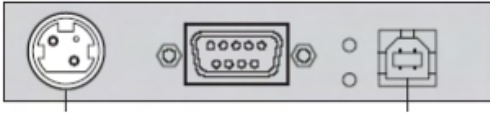


Computer end of
USB cable

Power supply cable



To avoid damage to the printer, connect the power supply cable last.



Power supply connector

USB connector

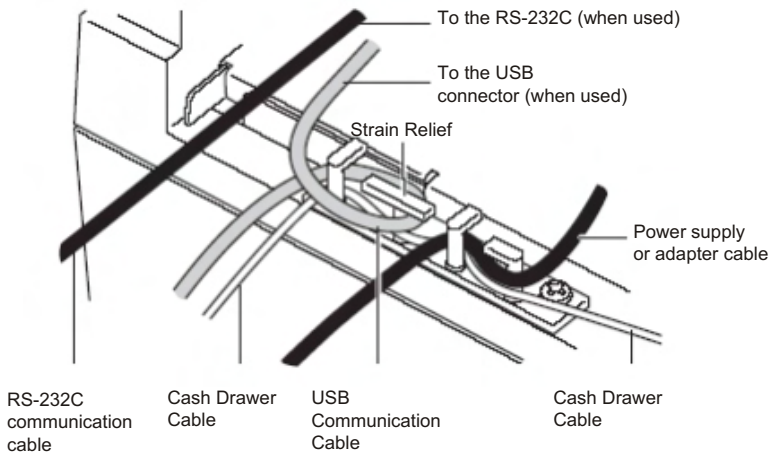
- Plug the power cord into the power supply.
- Route the cash drawer and power supply cables through the strain relief as shown in the next page. When the printer is configured for USB and the native “Cable routing”.
- Plug the power cord into the power supply, then plug the power supply into an outlet. The green LED on the top cover will light up.



Using this device without shielded cables voids the printer warranty, safety, FCC and CE mark designation.

Cable routing

To prevent the printer from becoming unplugged accidentally, make sure the cables are routed as shown in the illustration below.



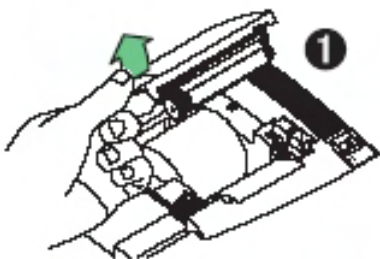
Test the printer

The test prints a list of various printer settings (Diagnostic form) and partially cuts the paper if a knife is installed (see sample on next page). The test printout items may vary depending on the printer model. This printout may be useful to a service representative if there is a problem. If something appears to be wrong with the test printout (such as missing or faded text), see the section "Troubleshooting" in this document.

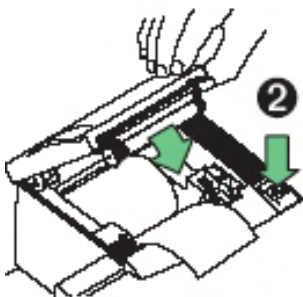
At the end of the test printout are instructions how to enter the configuration menu.

The configuration menu allows you to change the current settings of the printer.

- To run the test, either:
Open (1) then while holding down the paper feed button, close the receipt cover (2).



Open receipt cover.



Push and hold paper feed button while closing receipt cover.

OR

- Press the paper feed button and the reset button at the same time. The Diagnostic printout will print.

- When the printer begins printing let go of the paper feed button. The diagnostic printout will print.
- Review this printout for printer settings. If you wish to change any of these settings go to the configuration menu as instructed at the bottom of the printout.



Be extremely careful changing any of the printer settings to avoid inadvertently changing other settings that might affect the performance of the printer.

Make selections as instructed on the printout.

Paper type can be changed in the configuration menu. Paper types and grades available:

Type 0 - Monochrome grades Kanzaki P-310
Type 1 - Two-color grades Kanzaki P-310 RB
Type 4 - Two-color grades Kanzaki P-310 BB
Type 5 - Two-color grades Kanzaki P-320 RB

When the printer is configured for USB and the native USB solution driver is used, this location will show either: "USB Driver Type: Native" or "USB Driver Type: Printer Class".

*** Printer Config Menu ***

This config menu allows to set general printer parameters

Sub-menus are entered and selections are made using the Paper Feed Button :

- short click : Feed Button is quickly depressed then released
- long click : Feed Button is held down more than 1 second then released

CAUTION !!

The settings are predetermined in factory and should generally not be changed.
If you must change the settings do so carefully to avoid changing other functions.

***** MAIN MENU *****

Select a sub-menu : Click(s)

- EXIT -> 1
- Print Current Configuration -> 2
- Set Communication Interface -> 3
- Set Diagnostics Modes -> 4
- Set Emulation/Software Options -> 5
- Set Hardware Options -> 6
- Set Paper Type -> 7
- Set Firmware Features -> 8

Enter code, then hold Button DOWN
at least 1 second to validate

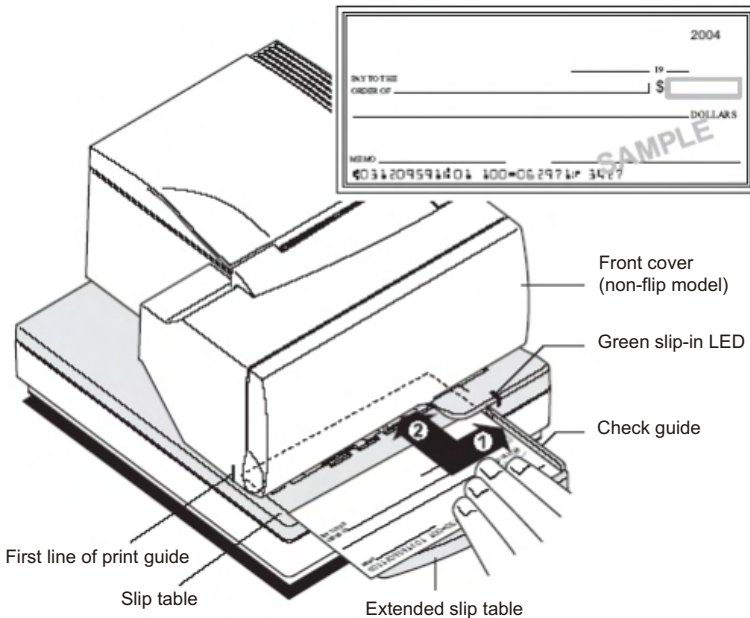
Using the Printer

Printing on forms or checks

There are several types of transactions that may require the insertion of a form or check into the printer:

- Credit card transaction (requiring a merchant verification or authorization slip)
- Multiple-part forms such as credit transactions or merchandise returns
- Electronic funds transfers
- Electronic check
- Check printing (printing the date, payee, and amount on the check face)
- Check endorsement

Although the illustration below shows a check being inserted into the printer, these instructions apply to any type of form. The TH420 can print on forms up to five parts thick.



To print on a form or check

- Insert the form or check (check shown in the illustration) from the front and place it on the slip table with the print side up. If the form is extra long, you may need to insert it from the side. A slight resistance may be felt when the form comes in contact with the form stop.
- Slide the form or check to the right until it aligns against the check guide.
- Slide a short form or check toward the back of the printer until it contacts the form stop (it will not be able to go any further).

For a long form, position it appropriately using the first line of print guide on the left side of the printer.

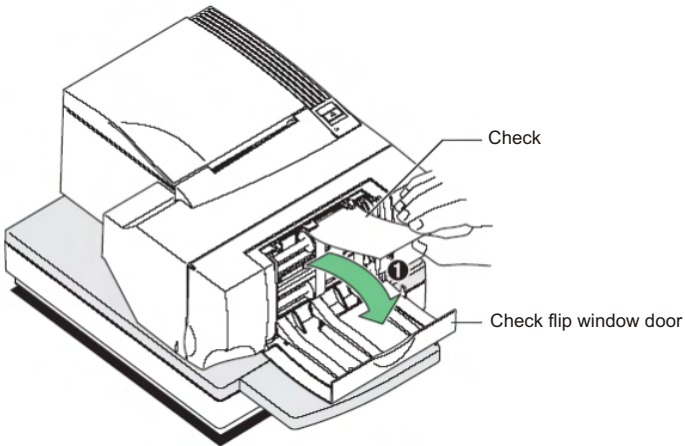
The green slip-in LED on the slip table turns on when the form or check is properly inserted (the form has to cover two sensors on the slip table).

- Follow the instructions from the host computer. The printer begins printing.
- Remove the form or check after it has been fed back out.
- Follow the instructions from the host computer to finish the transaction.

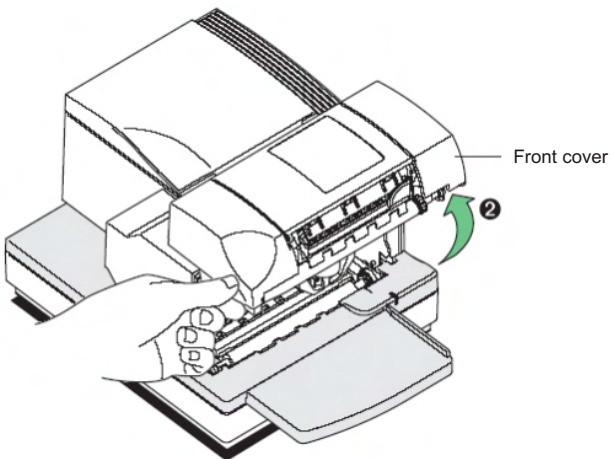
Clearing check flip paper jams

To clear a paper jam from the optional check flip assembly

Look in the window of the check flip assembly. If the jammed check is visible, open the window and remove it (1).



If the jammed check is not visible in the window, open the front cover (2) and remove the jammed check from behind the check flip assembly.



Printer configurations

Printers are shipped with all the functions and parameters pre-set at the factory. Settings for various printer parameters can be changed. This menu is printed on the receipt and scrolls through instructions for selecting and changing user changeable functions or parameters.



When changing the paper type, you will need to either send the “Set paper type” (1D 81 m n) command or use the “Set Paper Types” selection from the configuration menu.



Be extremely careful changing any of the printer settings to avoid inadvertently changing other settings that might affect the performance of the printer.

The following functions and parameters can be changed in the scrolling configuration menu (*except as noted):

- Communication Interface
 - RS-232C serial interface (25-pin)
 - Universal serial bus (USB)
 - Powered USB
- RS-232C serial interface settings
 - Baud rate
 - Data bits (*can not be changed)
 - Stop bits (*can not be changed)
 - Parity (*can not be changed)
 - Hardware (DTR/DSR) or software (XON/XOFF)
 - flow control
 - Data reception errors
 - Alternate DTR/DSR
- Diagnostic Modes
 - Normal
 - Datascope
 - Receipt test
 - Slip test
 - Check flip test
- Printer Emulations
 - TH420 native mode

- Printer settings and functions
 - Emulation/software option sub-menu
 - Printer ID mode
 - Default lines per inch
 - Carriage return usage
 - Default font
 - Font size
 - Slip eject at receipt select
 - Hardware options sub-menu
 - Printhead setting
 - Paper type name
 - Color density
 - Print density (mono)
 - Power supply wattage (max power)
 - Alternate reset feature
 - Knife option
 - Paper low sensor
 - Check flip option

Configuring the printer

The configuration menu allows you to select functions or change various settings for the printer. Instructions printed on the receipt, guide you through the processes.

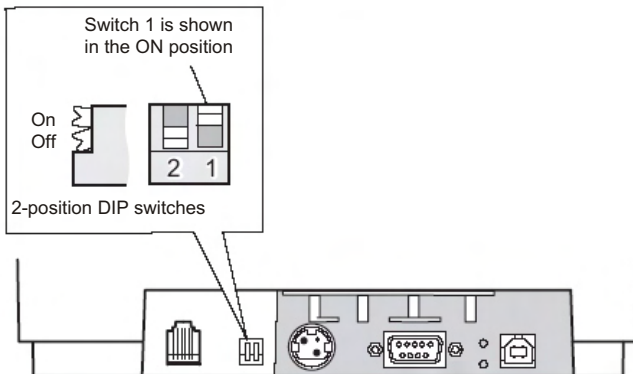


When changing the paper type, you will need to either send the “Set paper type” (1D 81 m n) command or use the “Set Paper Type” selection from the configuration menu.



Be extremely careful changing any of the printer settings to avoid inadvertently changing other settings that might affect the performance of the printer.

- Open the receipt cover and check if there is paper in the printer. If not, follow the instructions for loading paper.
- Turn the printer so the back is facing you.



- Set DIP switch 1 to the On position (up).
- Open the front cover of the printer and press the reset button while holding the paper feed button.

The printer beeps, prints the diagnostic form and the configuration main menu.

The printer pauses and waits for a main menu selection to be made (see sample printout below.)

```

*** Printer Config Menu ***

This config menu allows to set general printer parameters

Sub-menus are entered and selections are made using
the Paper Feed Button :

- short click : Feed Button is quickly depressed
                  then released
- long click  : Feed Button is held down more than
                  1 second then released

CAUTION !!
The settings are predetermined in factory and
should generally not be changed.
If you must change the settings do so carefully
to avoid changing other functions.

*****

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
MAIN MENU
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Select a sub-menu :      Click(s)
- EXIT                  -> 1
- Print Current Configuration -> 2
- Set Communication Interface -> 3
- Set Diagnostics Modes     -> 4
- Set Emulation/Software Options -> 5
- Set Hardware Options      -> 6
- Set Paper Type           -> 7
- Set Firmware Features     -> 8

Enter code, then hold Button DOWN
at least 1 second to validate

```

- Follow the printed instructions on the scrolling menu by pressing the paper feed button as indicated below to make selections.

Indicate "Yes" with a long click. (Press and hold paper feed button for more than one second.)

Indicate "No" with a short click. (Press paper feed button quickly.).

- Continue through your menu selections until you are asked, "Save New Parameters?" Select "Yes" or "No".

If you wish to save, select "Yes", then return DIP switch 1 to the Off position (down).

Press the reset button. The printer resets with the new selections. You can verify the setting by pressing the paper feed button to print out a diagnostics form or by holding the paper feed button and opening and closing the receipt cover.

- If you would like to continue configuring the printer, select “No”. The printer returns to the configuration menu where you can set parameters again.

Communication interface

To change the communication interface settings (except Ethernet), enter the configuration menu, select “Set Communication Interface” from the main menu and answer “Yes” to “SET INTERFACE TYPE?” printed on the receipt.

Be extremely careful changing any of the printer settings to avoid inadvertently changing other settings that might affect the performance of the printer.

Press the paper feed button as instructed to select the communication interface you want.

- Communication interface
- RS-232C interface
- USB (USB or Powered USB)

RS-232C serial interface settings

To change the RS-232C serial interface settings, enter the configuration menu, select “Set Communication Interface” from the main menu and answer “No” to “SET INTERFACE TYPE?” printed on the receipt. This will take you to the instructions for selecting the RS-232C settings.

Be extremely careful changing any of the printer settings to avoid inadvertently changing other settings that might affect the performance of the printer.

Press the paper feed button as instructed on the configuration menu to select the RS-232C settings you want to change:

- Baud rate
 - 115200 baud
 - 57600 baud
 - 38400 baud
 - 19200 baud
 - 9600 baud
 - 4800 baud

- 2400 baud
- 1200 baud
- Number of data bits can not be changed (not shown on printout)
- Stop bits can not be changed (not shown on printout)
- Parity can not be changed (not shown on printout)
- Hardware flow control
 - Software (XON/XOFF)
 - Hardware (DTR/DSR)
- Data reception errors
 - Ignore errors
 - Print “?”
- Alternate DTR/DSR
 - Enabled
 - Disabled

Press the paper feed button for at least one second to validate the selection.

Diagnostic modes

To change the diagnostic modes enter the configuration menu, select “Set Diagnostic Modes” from the main menu and select one of the following modes:

- Normal: normal operating mode of the printer.
- Datascope: the receipt printer prints incoming commands and data in hexadecimal format to help troubleshoot communication problems.
- Receipt test: the receipt printer prints two code pages to verify proper printing of the receipt.
- Slip test: the slip printer prints two code pages to verify the slip printer is operating properly.
- Check flip test: verifies that the check flip mechanism will flip an inserted check.



Be extremely careful changing any of the printer settings to avoid inadvertently changing other settings that might affect the performance of the printer.

See "Configuring the printer" for instructions on how to enter the configuration menu.

Enable or disable data scope mode

The data scope mode test prints a hexadecimal dump of all data sent to the printer: "1" prints as hexadecimal 31, "A" as hexadecimal 41 and so on. This helps troubleshoot communication problems and runs during a normal application (after being enabled through printer configuration).

Data scope mode is usually considered a level 1 diagnostic test.



Data scope mode is enabled and disabled by selecting the "Diagnostic Modes" sub-menu of the configuration menu.

Press the paper feed button as instructed on the "Diagnostic Modes Menu" to enable or disable the data scope mode test.

- Off, normal mode (Data scope mode disabled)
- Data scope mode (enabled)



Press the paper feed button for at least one second to validate the selection.

To run the data scope mode

- After you have enabled the data scope mode, exit the configuration menu.
- Run a transaction from the host computer.
All commands and data sent from the host computer will be printed as hexadecimal characters.

To exit the data scope mode

- Enter the configuration menu again.
See "Configuring the printer".
- Disable the data scope mode.
- Exit the configuration menu.
The printer is on-line and can communicate normally with the host computer.

Enable or disable receipt test mode

The receipt test mode verifies proper receipt printing. Receipt test is enabled and disabled by selecting the “Diagnostic Modes” sub-menu of the configuration menu. See “Configuring the printer”, for instructions on how to enter the configuration menu.

Do run the Receipt test mode

- Enable the receipt test mode in the configuration menu.
- Exit the configuration menu.
- Push the paper feed button. The receipt station prints two code pages and cuts the receipt.
- To repeat this test, push the paper feed button again.

To exit the receipt test mode

- Enter the configuration menu again. (See “Configuring the printer”)
 - Disable the receipt test mode.
 - Exit the configuration menu.
- The printer is on-line and can again communicate normally with the host computer.

Enable or disable slip test mode

The slip test mode verifies proper printing on a slip. Slip test is enabled or disabled by selecting the “Diagnostic Modes” sub-menu of the configuration menu. See “Configuring the printer” for instructions on how to enter the configuration menu.

To run the slip test mode

- Enable the slip test mode in the configuration menu.
- Exit the configuration menu.
- Insert a slip into the slip station.
- Push the paper feed button. Two code pages will be printed.
- To repeat this test, preform both steps before.

To exit the slip test mode

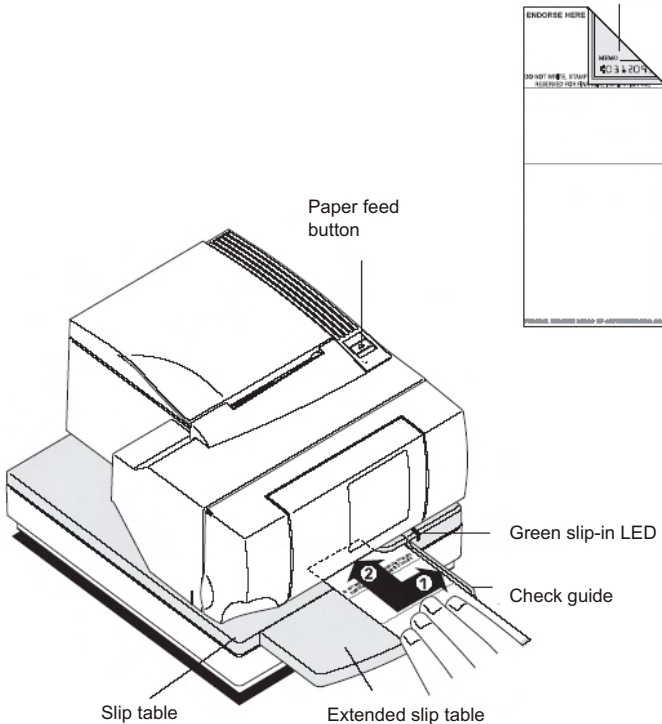
- Enter the configuration menu again. (See “Configuring the printer”)
 - Disable the slip test mode.
 - Exit the configuration menu.
- The printer is on-line and can again communicate normally with the host computer.

■

Enable or disable check flip test mode

The check flip test verifies that the check flip mechanism will flip an inserted check only. It does not read the check. Check flip test is enabled or disabled by selecting the “Diagnostic Modes” sub-menu of the configuration menu. See “Configuring the printer” for instructions on how to enter the configuration menu.

Check orientation - face down
Do not fold check.



To run the check flip test mode

- Enable the check flip test mode.
- Exit the configuration menu.
- Insert a check, lengthwise and face down into the slip station as if validating. (See “Verifying and validating checks”)



You must use a check to conduct the test. The test will not run if a slip or form is inserted.

- Push paper feed button.
The check is flipped and returned, but no printing is performed.

To exit the check flip test mode:

- Enter the configuration menu and “Diagnostic Modes” sub-menu again.
- Disable the Check flip test mode.
- Exit the configuration menu.

The printer is on-line and can again normally communicate with the host computer.

Printer settings and functions

To change the printer settings and functions, enter the configuration menu, select the submenu from the main menu and answer the questions printed on the receipt until you come to the instructions for selecting the printer settings.



Be extremely careful changing any of the printer settings to avoid inadvertently changing other settings that might affect the performance of the printer.



If it becomes necessary to clear lasting printer tallies, please contact an Wincor Nixdorf representative for instructions.

Press the paper feed button as instructed to select the printer settings you want.

Select the emulation/software options sub-menu to set

- Printer ID mode
This function is used to determine what printer ID value is returned in response to a Transmit printer ID command (1D 49 n) when the printer is in emulation mode. The printer can be configured to send back the ID of the TH420.
- Default lines per inch
This function allows you to set the default for lines per inch to either:
8.13 lines per inch
7.52 lines per inch
6.77 lines per inch
6.00 lines per inch

- Carriage return usage
This function allows the printer to ignore or use the carriage return (hexadecimal 0D) command depending on the application. Some applications expect the command to be ignored while others use the command as a print command.
- Default font
Sets the default font for monochrome, two-color, and Application Compatible Escape Commands emulations.
- Font size
Allows user to set font size for the emulation being used.
- Slip eject at receipt select
When enabled the printer ejects the slip when receipt is selected.

Select the hardware options sub-menu to set

- Printhead setting
This setting is the printhead energy rating and must match the rating marked on the the front right of the thermal mechanism in the printer. Whenever a new thermal mechanism is installed, this setting must match the indicated energy rating on the mechanism.
- Paper type name
Sets the printer to optimum performance for paper being used. This can also be done through the command 1D 81 m n. See Programming Supplement for command usage to enter the configuration menu. Available paper types may vary. Currently these are 4 types:
 - 0 – monochrome, Kanzaki P-310
 - 1 – two-color, Kanzaki P-310RB
 - 4 – two-color, Kanzaki P-320BB
 - 5 – two-color, Kanzaki P-320RB
- Color density
Adjusts printhead energy level to darken color printing or adjust to paper variations. When the printer prints high-density color print lines (text or graphics), it automatically slows down. Factory setting is 100%.



Choose an energy level no higher than necessary to achieve a dark printout. Failure to observe this rule may result in a printer service call or voiding the printer warranty. Running at a higher energy level will reduce the printhead life. Consult your Wincor Nixdorf technical support if you

have any questions.

- **Print density (monochrome papers only)**

Adjusts printhead energy level to darken printout or adjust for paper variations. When the printer prints high-density color print lines (text or graphics), it automatically slows down. Factory setting is 100%.

Choose a print density setting no higher than necessary to achieve acceptable print density. Failure to observe this rule may result in a printer service call and may void the printer warranty. Running at a higher energy level will reduce the printhead life. Consult your Wincor Nixdorf technical support specialist if you have questions.

- **Power supply wattage (Max power)**

You can choose between a 48-watt, 55-watt or 75-watt power supply. This matches the wattage of the printer to the power supply. 48-watt power supply (for older BEETLE systems), 55-watt power supply (standard), 75-watt power supply (Enables printer to optimize speed at higher dot coverage.)

- **Alternate reset feature**

This feature allows you to reset the TH420 by opening and closing the front cover instead of using the dip switch or reset button.

- **Knife option**

This should only be changed if the option is added or removed.

- **Paper low sensor**

Senses when the paper roll is getting low on paper. See Troubleshooting section "Receipt paper is low".

- **Check flip option**

Allows the user to enable or disable the check flip feature. This should only be changed when the option is added or removed.

Preventing overheating of the printhead

There are restrictions on the duty cycle because of the heat generated by the thermal printhead when printing solid blocks (regardless of the length of the block in relation to the print line).

The restrictions are ambient temperature, the percentage of time (measured against one minute) of continuous solid printing, and the amount of coverage.

Keep in mind that the ambient temperature may be affected by factors such as direct exposure to sun or close proximity to heating elements.



When the duty cycle exceeds the limits shown in the table, the receipt printhead will heat up and shut down. This may damage the printhead.

To avoid this problem, do one or a combination of the following:

- Reduce the amount of coverage.
- Reduce the time of continuous solid printing.
- Reduce the ambient temperature.

Allowable duty cycle (measured over one minute of continuous printing)

Amount of solid coverage	Ambient temperature		
	25°C	35° C	50° C
20%	100%	50%	20%
40%	50%	25%	10%
100%	20%	10%	4%

Duty cycle

Percentage of time that the specified “Amount of solid coverage” can be printed during a one minute period of time.

Example: at 20% solid coverage, 35° C temperature, a 50% duty cycle is to be used, resulting in 30 seconds of printing and 30 seconds without printing.

For reference

- A typical receipt with text (contains some blank spaces) is approximately 12% dot coverage.
- A full line of text characters (every cell on the line has a character in it) is approximately 25% dot coverage.
- Graphics are approximately 40% dot coverage.
- Barcodes are approximately 50% dot coverage.
- A solid black line is 100% dot coverage.

Troubleshooting the printer

The TH420 color printer is a simple, generally trouble-free printer, however unexpected conditions may arise. For example, the power supply may be disconnected or the thermal printhead may overheat.

The on-line, paper status, error LED on the operator panel may signal that something is wrong. The light on the front right side of the printer is used only to indicate when a form is inserted properly. It does not indicate an error.

For some unexpected conditions, the printer communicates the information to the host computer and relies on the application to indicate what the condition is.

The information on the following pages describes some conditions that you may encounter: conditions that you can easily fix, and others that you will need to contact a service representative for.

You may be able to correct many of the conditions without calling for service. However, if a condition persists, contact a service representative. See “Contacting a service representative” at the end of this chapter.

If an unexpected condition has occurred, take the following general steps:

- Cycle the power of the printer and note its behavior.
- Check the on-line, paper status, error LED and compare its behavior to the following table.

TROUBLESHOOTING THE PRINTER

Status	LED behavior
Power off	Off
Firmware download	Fast blink
Level 0 diagnostics (entered at power on or in reset)	Fast blink
Paper low Temperature error Voltage error	Slow blink
Cover open (receipt, slip or flip) Paper out Carriage jam Slip jam Flip jam Knife jam	Fast blink
All other states	ON

- Test the receipt printer or slip printer by printing a sample test print as described elsewhere in this document.
- Determine if the condition is with the thermal receipt printer or the impact slip printer and refer to the tables on the following pages.

If unexpected conditions arise while installing the USB driver, take a look in USB Driver Installation, troubleshooting.

Printer beeps

Condition	Possible causes	What to do
Printer beeps in a single, double, or triple pattern at first power on. The on-line, paper status, error LED blinks in the same pattern, and the printer won't power up.	The printer has a problem with its electronics.	Contact a service representative.
Printer beeps during normal operation.	The printer may be programmed to beep during normal operation by the software application used on the host computer.	Consult your application software manual.

Printer will not print

Condition	Possible causes	What to do
The on-line, paper status, error LED is blinking and the printer won't print.	The receipt paper may be out, the cover open,the knife jammed, the supply voltage out of range, or the print head temperature out of range.	Check that the receipt paper is properly loaded and covers are closed. See the table at the beginning of this section. If problem continues contact a service representative.
Printer doesn't have power (LED not on)	Power supply may be defective.	If the power supply is plugged in, but does not come on, you need to order a new power supply. See "Power supply and power cords."
Printer has power but doesn't print.	Cables may not be connected properly.	Check all cable connections. Check that the host computer and power supply are both on (the power supply is turned on by plugging it into an outlet). See "Connect the cables."
	DIP switches not set correctly.	Check the switch setting. DIP switch one should be off (up) for normal operation.
	All other causes.	Contact a service representative.

On-line, paper status, error light flashes

Condition	Possible causes	What to do
The on-line, paper status, error LED is blinking.	Receipt paper is out. Change the paper now. Do not run a transaction without paper. Data may be lost.	Receipt paper is out. Change the paper immediately. See "Load and change the receipt paper."
	Receipt, front or flip cover is open.	Close the cover. The printer will not operate with any of the covers open.
	The knife is jammed.	Open the receipt cover and check the knife. Clear any jammed paper you can see. Tear off any excess paper against the tear-off blade.

TROUBLESHOOTING THE PRINTER

The on-line, paper status, error LED is blinking.	The slip is jammed.	Open the front cover and clear paper from path.
	The carriage is jammed.	Open front cover and clear paper from path.
	A jam during flip.	If visible through front window, open access door and clear paper jam, if not, open front cover and clear jam.
	Receipt paper is low.	There are about 4.5 meters, \pm 3 meters, (15 feet, \pm 10 feet) of paper left. Change the paper soon to avoid running out of paper part way through a transaction. See "Load and change the receipt paper."
	Thermal print head temperature is out of range.	The print head may overheat when printing in a room where the temperature is above the recommended operating temperature or when printing high density graphics continuously, regardless of the room temperature. In either case, the printer will shut off. If the temperature of the print head is too hot, adjust the room temperature or move the printer to a cooler location. If the printhead is overheating because of printing high density graphics continuously, reduce the demand on the printer.
	AC supply voltage is out of range.	If paper is not low and no conditions indicate that the thermal print head is too hot, the power supply voltage is out of range. Contact a service representative.

Slip-in LED does not light (rectangular green LED on slip table)

Condition	Possible causes	What to do
LED does not light	No check or form inserted into printer.	Ensure the check or form is aligned properly. See "Printing on forms or checks."
	Check or form incorrectly inserted.	

Poor forms print quality

Condition	Possible causes	What to do
Printer starts to print, but stops while form is being printed.	Communication error or software error.	Check the interface cable. Check that the software is working properly.
Forms print is light or spotty.	Form not inserted incorrectly.	See "Printing on forms or checks."
	Impact printhead is dirty or defective.	Contact a service representative.
	Improper internal cable connections.	Contact a service representative.
	Ribbon cassette is defective	See "Installing or replacing the ribbon cassette."
Ribbon cassette is worn.	Replace the ribbon cassette.	See "Installing or replacing the ribbon cassette."
Light print, smudging, or slip skews.	Platen gap needs adjustment.	Contact a service representative.

Poor receipt print quality

Condition	Possible causes	What to do
Colored stripe on receipt.	Paper is low.	Change the paper.
Receipt does not come out all the way.	Paper is jammed.	Open the receipt cover, inspect the knife, and clear any jammed paper.
Printer starts to print, but stops while the receipt is being printed.	Paper is jammed.	Open the receipt cover, inspect the knife, and clear any jammed paper.

TROUBLESHOOTING THE PRINTER

Print is light or spotty.	<p>Paper roll loaded incorrectly.</p> <p>Thermal printhead is dirty.</p> <p>Improper internal cable connections.</p> <p>Printhead is defective.</p>	<p>Check that the paper is loaded properly.</p> <p>Use recommended thermal receipt paper. Clean the thermal printhead with an alcohol pen prior to going back to an approved paper. Do not spray the thermal printhead with household cleaner as this may damage it and the electronics. The thermal printhead does not normally require cleaning if the recommended paper grades are used. If non-recommended paper has been used for an extended period of time, cleaning the printhead with an alcohol pen will not help.</p> <p>Contact a service representative.</p> <p>Contact a service representative.</p>
Color print is light.	Variations in paper.	Increase energy level of printhead in "Color Density Adj" of the printer configuration menu (see "Configuring the printer" section).
Inconsistent printing, no two-colorprint.	Paper type used and papertype setting do not match.	Print diagnostic form and verify paper type setting to type 0, 1, 4, or 5 (see "Configuring the printer" section)
Vertical column of print is missing, one side of receipt is missing, or top or bottom half of characters are missing.	Printhead is defective.	Contact a service representative.
Print cassette ribbon jams when check flip option is used	Improper ribbon cassette. An approved Wincor Nixdorf cassette must be used with the check flip option	Replace cassette with a cassette approved for the check flip option.

Slip station and flip problems

Condition	Possible causes	What to do
Slip table LED does not come on.	Form or check not inserted properly.	Line up the form or check against the check guide (wall) and slide it toward the back of the printer until it contacts the form stop and can't go any further. Extra long forms may need to be inserted from the side to disengage the Form Stop. See "Printing on forms or checks" section or "Verifying and validating checks" section.
Forms or checks skew or catch in the slip station.	There is an obstruction or paper jam in the slip station.	Open the front cover and check for paper jams or obvious obstruction in the slip station. Clear the obstruction or jammed paper.
The optional check flip mechanism doesn't work.	There is an obstruction or paper jam in the check flip mechanism.	See "Clearing check flip paper jams".
Print cassette ribbon jams when check flip options is used. The check flip option.	Improper ribbon cassette. Approved Wincor Nixdorf cassette must be used .	Replace ribbon cassette with a cassette approved for the check flip option.

The knife does not operate

Condition	Possible causes	What to do
Receipt is not cut	Paper is jammed	Open the receipt cover, inspect the knife, and clear any jammed paper.
	The printer has a knife but the firmware is not configured for a knife.	Enable the knife option by reconfiguring the printer. See " Configuring the printer".
	All other problems.	Contact a service representative.

Other conditions

The following problems all need to be corrected by a qualified service representative.

- Terms not feeding into the slip/forms area properly
- Missing dots in slip or forms printing
- Printer will not cycle or stop when required
- Illegible characters
- Paper will not feed
- Knife will not cycle or cut
- Platen will not open or close
- Printer will not communicate with the host computer

Paper and Supplies

Forms specifications

The TH420 prints on single- or multiple-part forms in the slip station (up to five-part forms).

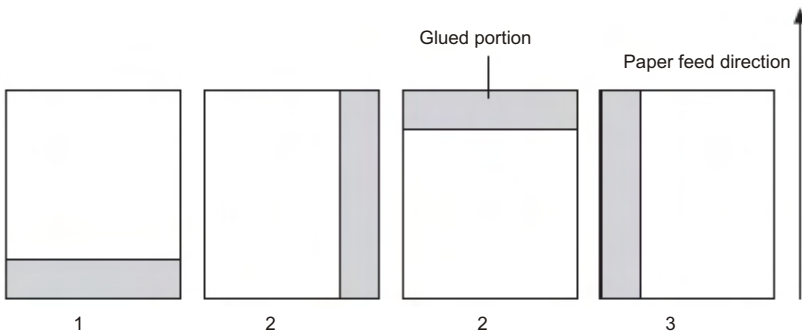
Forms and slips must meet the following requirements:

- Front insertion (minimum)
 - 51 mm (2.00") wide
 - 68 mm (2.68") long
- Side insertion (minimum)
 - 203 mm (8.0") wide
 - 51 mm (2.0") long
- Single-ply forms should be on paper that is greater than 6,8 kg (15 pounds)
- Multiple-part forms (up to five parts) should be no thicker than 0.40 mm (0.016") and a minimum thickness of 0.08 mm (0.003").

Do not use forms containing holes along the top or right edge.

- Forms for use with flip check (minimum)
 - 51 mm (2.00") wide
 - 70 mm (2.75") long

Slip forms - recommendations



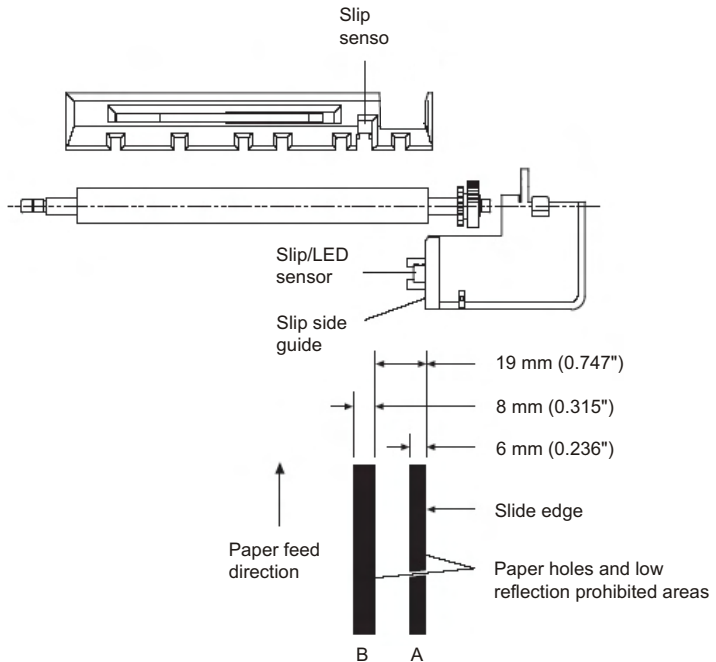
SLIP FORMS - RECOMMENDATIONS

- The slip form should be flat and void of curls or wrinkles, especially at the top.
- Considerations for glued edges on slip paper

No glue on bottom edge (1).

Right or top edge (2): Paper feeding and insertion are affected by gluing method, length of edge, and quality of glue used.

- Left edge or wide slip paper (3): Skewing may occur.



The Slip/LED sensors use a reflective photo sensor.

- Do not use paper that has holes or is translucent at the Slip/LED sensor location. (See "A" in above illustration.)
- Do not use paper that has holes on dark areas with low reflection (less than 60% reflection) at the slip sensor location. (See "B" in above illustration.)
- Thin paper should be used between the top and bottom sheets of multi-ply paper. Thick paper reduces the copy capability.

Check specifications

Check specifications for paper are defined by American Standards ANSI X9.13 and ANSI X9.18, and International Standard ISO 1004.

- Minimum check size: 70 mm (2.75") wide x 152 mm (6.00") long
- Maximum check size: 95 mm (3.75") wide x 222 mm (8.75") long

Technical Data

Printer Output		
	Receipt Station	Slip Station
Print Method	Direct Thermal, 203 DPI	9-Pin Impact
Character Cell Size	13 X 24, 10 X 24	7 X 7, 12 X 7, 5 X 9
CPI	15.6, & 20.3	13.9 & 16.8
Print Columns	44 & 56	66 / 80
Print Line Width	72 mm (2.8 in.)	120 mm (4.7 in)
Printing Speed	Monochrome 59 LPS (180 mm/sec) Color 29.6 LPS (100 mm/sec)	4.8 LPS
Character Sets	Page 437, 737, 850, 852, 857, 858 (with Eurosymbol), 860, 862, 863, 865, 866, and 1252 (Expanded character sets available)	
Bar Codes	UPC-A, UPC-E, Code 39, Code 93, Code 128, JAN8 and JAN13 (EAN), Interleaved 2 of 5, Codabar, PDF 417 (receipt station only)	
Auto Cutter	Partial Cut, leaves 5 mm uncut on the left edge	
Physical		
Dimensions (W x D x H)	229 x 264 x 178 mm (9.0 x 10.4 x 7.0 inches) 229 x 348 x 178 mm (9.0 x 13,7 x 7.0 inches) incl. table	
Weight	4,3 kg (9.4 lbs.)	
Power Requirements	24 VDC, 3 Amps	
Software and Firmware Capability		
Emulations Available	Application Compatible Escape Commands (ACEC) TH420	
Data Buffer	4K	
User Memory	1088K shared for graphics, logos, user defined characters, user data storage, and electronic journal	
Communication	Board Architecture supports: 25-pin RS232, USB, PoweredUSB	

Printer Drivers Software Support	OLE POS for Windows (OPOS), JavaPOS, RDI DOS, LRD1
Thermal Paper Requirements	
Paper Type	Direct Thermal, POS Grade(s) e.g. WN T55, special requirements for color printing
Paper Roll (W x Dia.)	80 mm x 90 mm (3.15 in. x 3.5 in.)
Impact Slip Forms Requirements	
Size	68 mm x 51 mm (2.68 in. x 2.0 in.) minimum front insertion
Maximum Length	279.4 mm(11.00 in.)
Number of Plies	1 - 5 ply multipart, max. 0.4 mm thick (0.016 in.)
Miscellaneous	
Certifications	EMC emissions: EN55022:1998 Class B ITE emission requirements (EU); FCC 47 CFR Part 15, Class B emissions requirements (USA); VCCI Class B ITE emissions requirements (Japan); AS/NZS 3548:2002/CISPR22 Class B ITE emission requirements (Australia); EMC Immunity: EN55024:1998/A1:2001 Information technology equipment (EU)
Reliability	Thermal Print Mechanism; 200 KM paper (59M lines) monochrome, 100 KM two color (53 M lines), Auto Knife Cutter; 1.5M cuts Impact Print Mechanism; 15 M lines Impact Printhead; 200M characters
Paper Thickness	0.35 mm (0.014 in. maximum)

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